H. P. OR Rad. Exp. — Air Monitoring, etc 2657

INTER-COMPANY CORRESPONDENCE

UNION CARBIDE NUCLEAR COMPANY

A Division of Union Carbide and Carbon Corporation

To: Mr. M. E. Ramsey
Oak Ridge National Laboratory

Plant: Oak Ridge Gaseous Diffusion

Date: December 9, 1957

Copies To: Mr. K. W. Bahler
Mr. L. B. Emlet
Mr. R. G. Jordan
Mr. J. P. Murray

Subject: Environmental Monitoring Procedures

Copy Fwd. by MER, 12-16-57
WKWhitson

As requested by Mr. Emlet, we are forwarding the following data for inclusion in the four-plant reply to Mr. Sapirie's letter of November 12, "Environmental Monitoring Procedures":

1. Environmental Monitoring Procedures, ORGDP, giving air monitoring stations for radioactive materials and other air contaminants.

2. ORGDP Drainage Area Map Showing Continuous Water Sampler Locations, with Table I, Water Survey Sampling, and Table II, Water Survey Analyses.

A. P. Huber

AFB:mhb

Attachments
Described abv (In Trip.)

No RC

2657

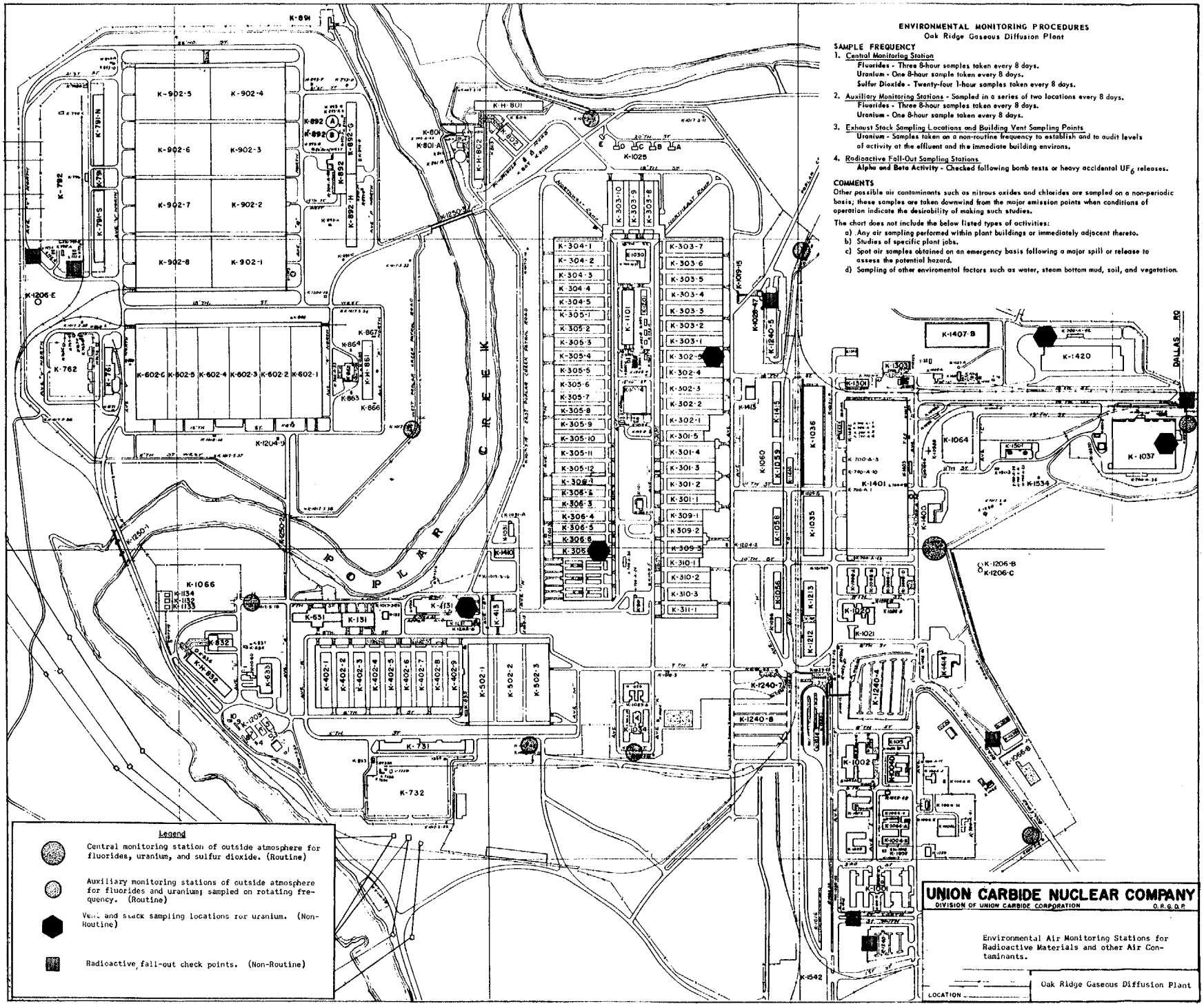
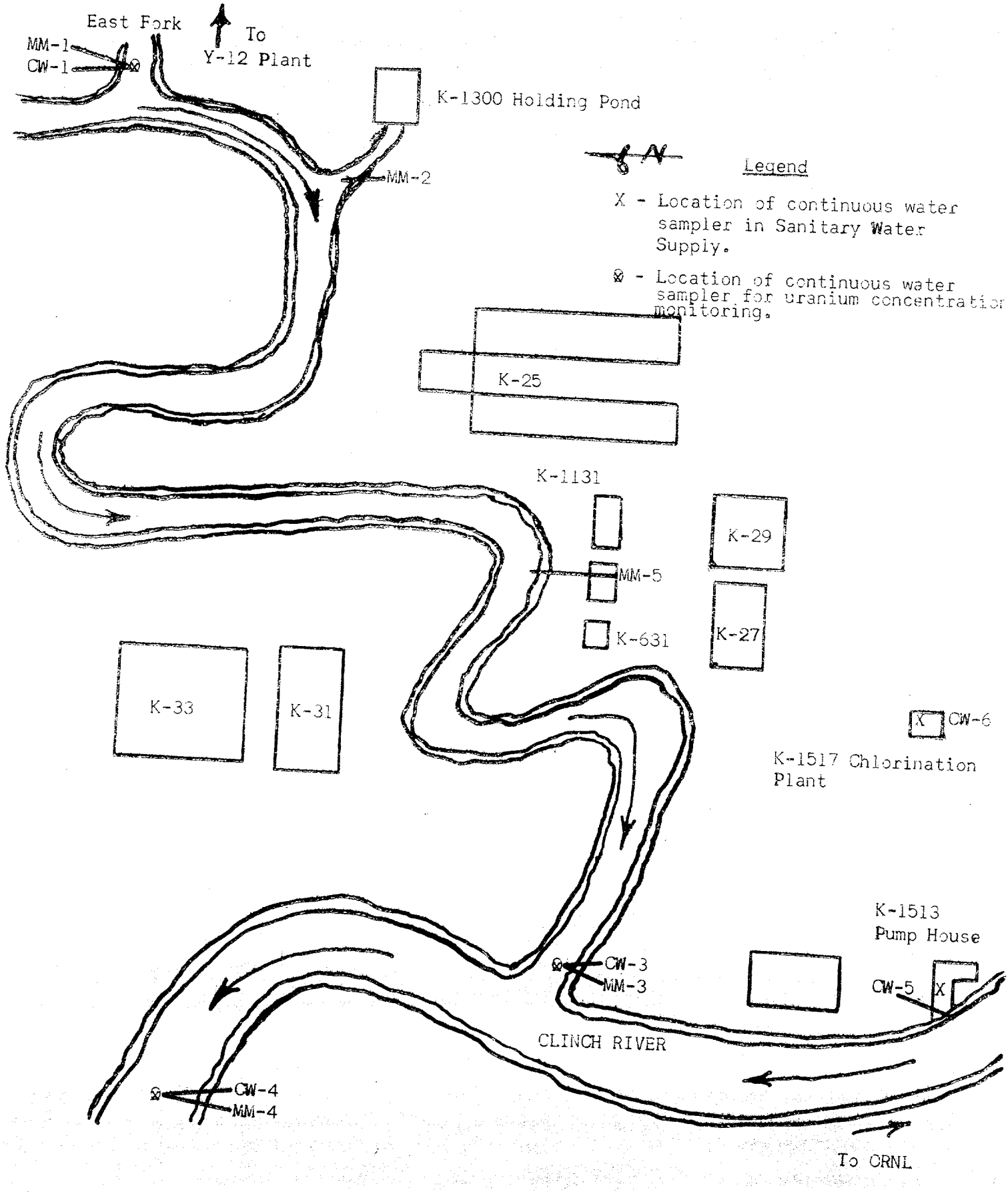

ENVIRONMENTAL MONITORING PROCEDURES
Oak Ridge Gaseous Diffusion Plant
SAMPLE FREQUENCY
1. Central Monitoring Station
Fluorides - Three 8-hour samples taken every 8 days.
Uranium - One 8-hour sample taken every 8 days.
Sulfur Dioxide - Twenty-four 1-hour samples taken every 8 days.
2. Auxiliary Monitoring Stations - Sampled in a series of two locations every 8 days.
Fluorides - Three 8-hour samples taken every 8 days.
Uranium - One 8-hour sample taken every 8 days.
3. Exhaust Stack Sampling Locations and Building Vent Sampling Points
Uranium - Samples taken on a non-routine frequency to establish and to audit levels of activity at the effluent and the immediate building environs.
4. Radioactive Fall-Out Sampling Stations
Alpha and Beta Activity - Checked following bomb tests or heavy accidental UF6 releases.
COMMENTS
Other possible air contaminants such as nitrous oxides and chlorides are sampled on a non-periodic basis; these samples are taken downwind from the major emission points when conditions of operation indicate the desirability of making such studies.
The chart does not include the below listed types of activities:
a) Any air sampling performed within plant buildings or immediately adjacent thereto.
b) Studies of specific plant jobs.
c) Spot air samples obtained on an emergency basis following a major spill or release to assess the potential hazard.
d) Sampling of other enviromental factors such as water, steam bottom mud, soil, and vegetation.
Legend
Central monitoring station of outside atmosphere for fluorides, uranium, and sulfur dioxide. (Routine)
Auxiliary monitoring stations of outside atmosphere for fluorides and uranium; sampled on rotating frequency. (Routine)
Vent and stack sampling locations for uranium. (Non-Routine)
Radioactive fall-out check points. (Non-Routine)
POPLAR CREEK
UNION CARBIDE NUCLEAR COMPANY
DIVISION OF UNION CARBIDE CORPORATION
O.R.G.D.P.
Environmental Air Monitoring Stations for Radioactive Materials and other Air Contaminants.
LOCATION
Oak Ridge Gaseous Diffusion Plant

FIGURE I

ORGDP DRAINAGE AREA MAP SHOWING CONTINUOUS WATER SAMPLER LOCATIONS



November 26, 1957

TABLE I

WATER SURVEY SAMPLING

Plot No.	Frequency of Sampling	Sampling Location
CW-1	Biweekly	East fork junction with Poplar Creek
CW-2	Monthly	Poplar Creek opposite K-27 drain
CW-3	Biweekly	Poplar Creek at junction with Clinch River
CW-4	Biweekly	Clinch River one mile below junction with Poplar Creek
CW-5	Biweekly	Sanitary water pumphouse influent
CW-6	Biweekly	Effluent from ORGDP Water Purification Plant
CW-7	Biweekly	Clinch River intake of make-up cooling water at K-901
DW-1	Weekly - Include cafeteria cooking water at least once monthly	Plant drinking water
DW-3	Monthly composite of weekly samples	Drainage from Labs. A, B, C, and D
MM-1	Monthly	Bottom mud, east fork at junction with Poplar Creek
MM-2	Monthly	Bottom mud of K-1300 drain at junction with Poplar Creek
MM-3	Monthly	Bottom mud of Poplar Creek at junction with Clinch River
MM-4	Monthly	Bottom mud of Clinch River one mile below junction with Poplar Creek

Plot No.	Frequency of Sampling	Sampling Location
MM-5	Monthly	Bottom mud of Poplar Creek opposite the K-27 drain
MM-7	Sample each batch as dumped	Sludge, Sewage Disposal Plant

GSH:msp
November 26, 1957
UCNC - ORGDP

TABLE II

WATER SURVEY ANALYSES

Plot No.	Type of Sample	Type Analyses
CW-1	3-4 day composite	Beta activity, uranium, fluorides, and pH
CW-2	Spot sample	Beta activity, uranium, and pH
CW-3	3-4 day composite	Beta activity, uranium, fluorides, and pH
CW-4	3-4 day composite	Beta activity, uranium, fluorides, and pH
CW-5	3-4 day composite	Beta activity, uranium, and pH
CW-6	3-4 day composite	Beta activity and fluorides
CW-7	3-4 day composite	Beta activity and uranium
DW-1	Spot sample	Beta and alpha activity, and uranium
DW-3	Spot sample	Beta and alpha activity
MM-1	Spot sample	Beta and alpha activity, and uranium
MM-2	Spot sample	Beta and alpha activity, and uranium
MM-3	Spot sample	Beta and alpha activity, and uranium
MM-4	Spot sample	Beta and alpha activity, and uranium
MM-5	Spot sample	Beta and alpha activity, and uranium
MM-7	Spot sample	Beta and alpha activity, and uranium

GSH:msp
November 26, 1957
UCNC - ORGDP

Health Phys
Rad. Exposure
Air Monitoring

UNION CARBIDE NUCLEAR COMPANY

A DIVISION OF UNION CARBIDE AND CARBON CORPORATION

UCC

POST OFFICE BOX P
OAK RIDGE, TENNESSEE

January 21, 1958

U. S. Atomic Energy Commission
Post Office Box E
Oak Ridge, Tennessee

Attention: Mr. S. R. Sapirie

Gentlemen:

Subject: ENVIRONMENTAL MONITORING PROCEDURES

The attached information supplements our letter of November 25, 1957, which was inadvertently omitted at that time.

Yours very truly,

UNION CARBIDE NUCLEAR COMPANY

Clark E. Center
Vice President

CEC:JAS:esMc

Attachments 3:
Environmental Monitoring
Procedures for:
Oak Ridge Gaseous Diffusion Plant
Y-12 Plant
Paducah Plant

cc: L. B. Emlet
A. P. Huber
R. G. Jordan
J. P. Murray
K. Z. Morgan
A. H. Snell
J. A. Swartout

Enclosure I

Oak Ridge Gaseous Diffusion Plant

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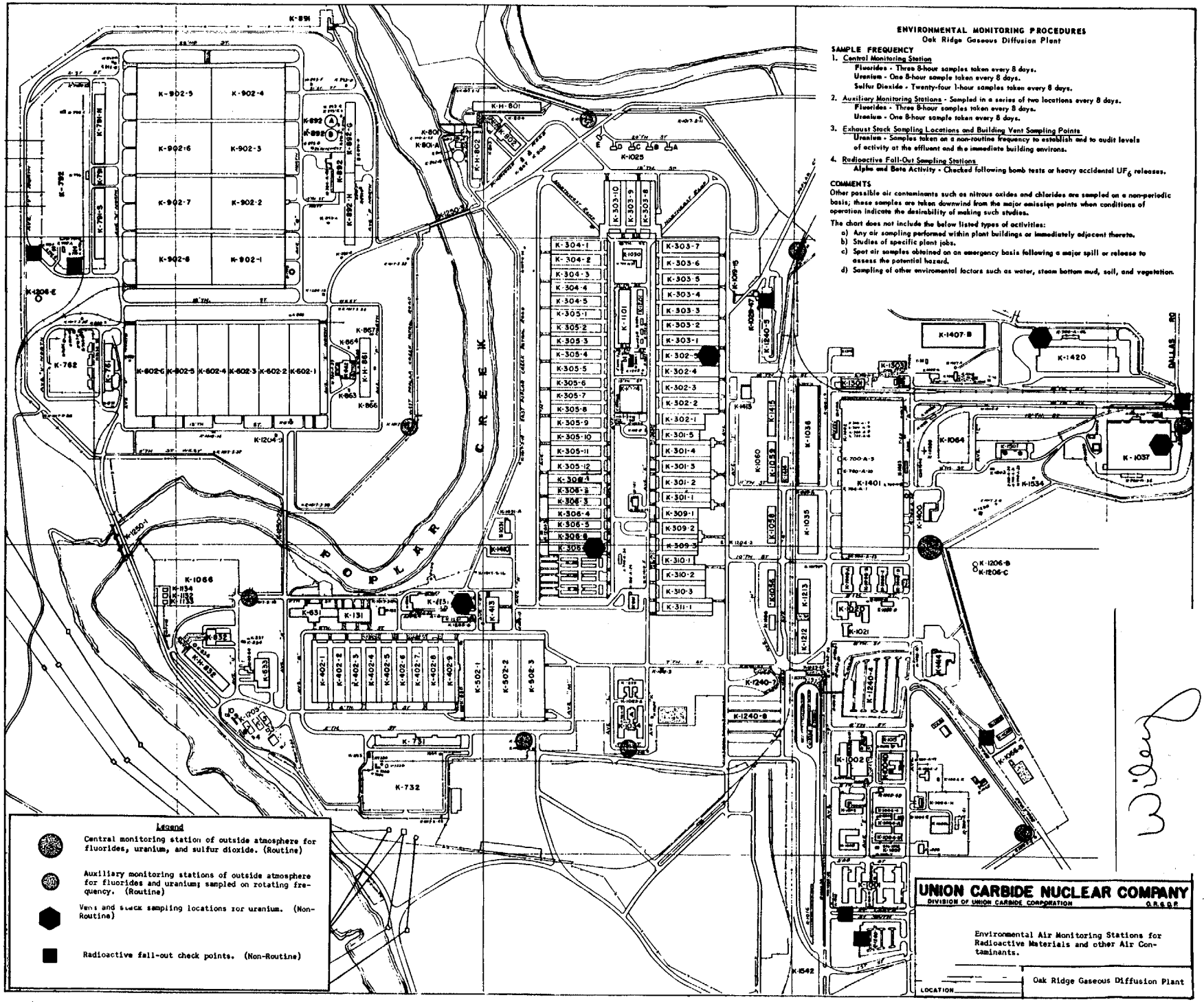
ORGDP Drainage Area Map Showing Continuous Water Sampler Locations, with Table I, Water Survey Sampling, and Table II, Water Survey Analyses.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Oak Ridge Gaseous Diffusion Plant
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Auxiliary monitoring stations of outside atmosphere for fluorides and uranium; sampled on rotating frequency. (Routine)
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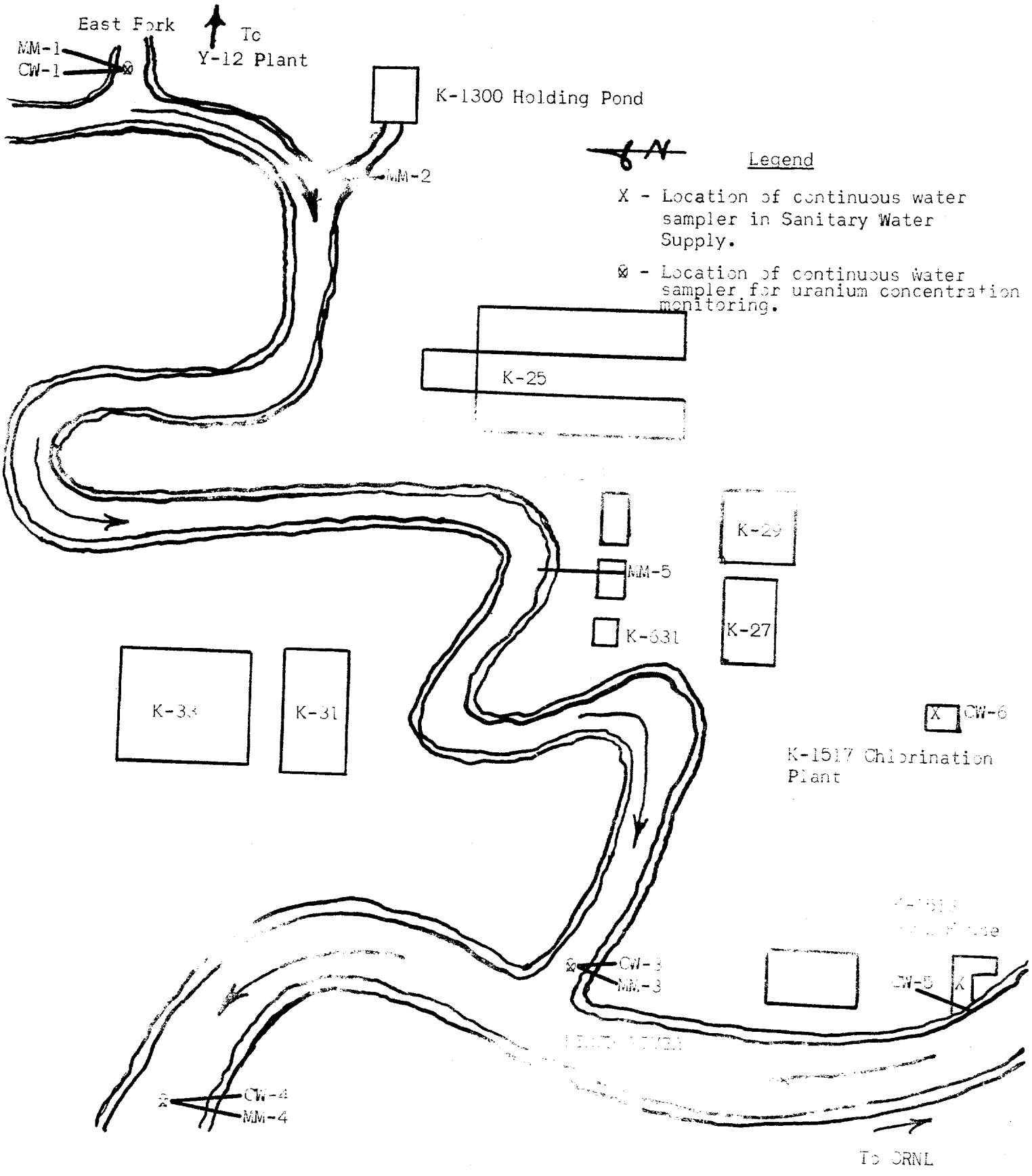
POPLAR CREEK
UNION CARBIDE NUCLEAR COMPANY
DIVISION OF UNION CARBIDE CORPORATION
O.R.G.D.P.
Environmental Air Monitoring Stations for Radioactive Materials and other Air Contaminants.
LOCATION
Oak Ridge Gaseous Diffusion Plant

FIGURE I

ORGDP DRAINAGE AREA MAP SHOWING CONTINUOUS WATER SAMPLER LOCATIONS



November 28, 1967

TABLE 1

WATER SURVEY SAMPLING

Plot No.	Frequency of Sampling	Sampling Location
CW-1	Biweekly	East fork junction with Poplar Creek
CW-2	Monthly	Poplar Creek opposite K-27 drain
CW-3	Biweekly	Poplar Creek at junction with Clinch River
CW-4	Biweekly	Clinch River one mile below junction with Poplar Creek
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DW-1	Weekly - Include cafeteria cooking water at least once monthly	Plant drinking water
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MM-3	Monthly	Bottom mud of Poplar Creek at junction with Clinch River
MM-4	Monthly	Bottom mud of Clinch River one mile below junction with Poplar Creek

Plot No.	Frequency of Sampling	Sampling Location
MM-5	Monthly	Bottom mud of Poplar Creek opposite the K-27 drain
MM-7	Sample each batch as dumped	Sludge, Sewage Disposal Plant

TABLE II

Water Survey Analyses

Plot No.	Type of Sample	Type Analyses
CW-1	3-4 day composite	Beta activity, uranium fluorides, and pH
CW-2	Spot sample	Beta activity, uranium, and pH
CW-3	3-4 day composite	Beta activity, uranium, fluorides, and pH
CW-4	3-4 day composite	Beta activity, uranium, fluorides, and pH
CW-5	3-4 day composite	Beta activity, uranium, and pH
CW-6	3-4 day composite	Beta activity and fluorides
CW-7	3-4 day composite	Beta activity and uranium
DW-1	Spot sample	Beta and alpha activity, and uranium
DW-3	Spot sample	Beta and alpha activity
MW-1	Spot Sample	Beta and alpha activity, and uranium
MW-2	Spot Sample	Beta and alpha activity, and uranium
MW-3	Spot Sample	Beta and alpha activity, and uranium
MW-4	Spot Sample	Beta and alpha activity, and uranium
MW-5	Spot Sample	Beta and alpha activity, and uranium
MW-7	Spot Sample	Beta and alpha activity, and uranium

MER

L.B.Emlet (4)
J.A.Swartout (2)

UNITED STATES
ATOMIC ENERGY COMMISSION

Copies forwarded 11-15-57 to
K. Z. Morgan
A. H. Snell
J. C. Hart - Please prepare reply for CEC's signature.
JAS

IN REPLY REFER TO:
ORB:JAL

Oak Ridge, Tennessee
November 12, 1957

Copy Fwd. by MER, 12-16-57
WKShitson

COPY
FORWARDED BY
C. E. CENTER

Union Carbide Nuclear Company
Post Office Box P
Oak Ridge, Tennessee

Attention: Mr. C. E. Center, Vice President

Subject: ENVIRONMENTAL MONITORING PROCEDURES

Gentlemen:

We are interested in obtaining for our files information concerning the general environmental monitoring procedures followed by our major contractors.

The following information is requested concerning the monitoring programs in effect at UCNC installations:

a. Location of any building exhaust and environmental air monitoring stations, (a small marked map would be helpful).

b. Frequency of sampling at each station.

c. Types of analyses normally made on samples.

Your Paducah plant submitted sewer effluent and surface water monitoring procedures recently and only the additional information is requested from Paducah.

Your cooperation in this matter is appreciated.

Very truly yours,

for S. R. Sapirie
Manager
Oak Ridge Operations

CC: R. C. Armstrong
H. M. Roth

Enclosure II

Y-12 Plant

The following information relating to environmental monitoring procedures as employed by the Y-12 Plant is discussed as outlined in the letter to USAEC dated November 12, 1957.

a. and b.

Effluent Water Sampling

East Fork of Poplar Creek - There is a water sampling station due south of Building 9720-8. An automatic sampling device takes water samples from the creek at approximately 15-minute intervals. This sampler is so designed that it takes a sample proportional in volume to the amount of water flowing in the creek. A portion of this sample is analyzed daily for pH and the alkali metals Na, K, and Li. Another portion is composited into a weekly sample which is analyzed for alpha, beta, and mercury.

Bear Creek - Once a week a spot sample is dipped from Bear Creek, at a spot one mile west of the Y-12 burial pit, at a location where the Bear Creek road crosses the creek. This sample is analyzed for alpha and beta.

Air Sampling

Outside Air Sampling - There are three air samplers which are considered to be representative of the general outside air levels at their respective locations as listed below:

1. Approximately 15 feet east of Building 9723-12.
2. Approximately 10 feet south of Building 9983.
3. In the intake air on the west side of Building 9995.

These samplers are operated on a 24-hour per day, seven days a week basis. The samples from Building 9723-12 and Building 9983 locations are analyzed for alpha and beta. Those taken at Building 9995 are analyzed for alpha only.

Beryllium samples are taken each work day in the filter house and exhaust of Building 9766 (Y-12 Beryllium Shop) for spectrographic analysis. Air samples are taken in the vicinity of the building if the results of the air exhaust approaches the established limits for an eight-hour day.

Two of Health Physics outside uranium air samplers, located east of Building 9723-12 and west of Building 9711-1, have recently been utilized for all cations not radioactive. These samples are collected daily, composited weekly, and analyzed spectrographically.

All process building exhausts are sampled during the initial start-up of operations containing potential hazardous materials and continued until the contaminant is below the established limit. Surveys are made at random, depending on conditions, to determine whether airborne contaminants are remaining below the established threshold limits.

Building Effluent Monitoring - A routine air monitoring program is maintained in the following locations in the Area 5 exhaust systems:

1. Exhaust from Sunflower, east of Building 9720.
2. Exhaust from Daffodil Machining and Foundry area, northeast corner of Building 9212.
3. Exhaust from Daffodil Salvage areas, east end of roof of C-Wing of Building 9212.
4. Exhaust from Daffodil Salvage, Special Processing, and Dry Chemistry areas, east end of roof of D-Wing of Building 9212.
5. Exhaust from Daffodil Salvage area, west end of 9212.
6. Exhaust from Daffodil Salvage area, center of roof of C-Wing of Building 9212.
7 and 8. Two exhausts from Daffodil Special Processing area, northwest corner of Building 9212 roof.

Samplers 1 through 4 are run continuously from ~ 8:00 p.m. Monday to ~ 3:30 p.m. Friday of each week. Samplers 5 through 8 are run once per month for a period of from 5 to 7 hours. Both types of samples are analyzed for uranium by alpha counting.

These samples are taken for the dual purpose of estimating inventory loss and air contamination potential.

Planned Building Effluent Monitoring - The following additional sampler locations for building effluent monitoring are planned.

Eight samplers in the exhaust from [redacted] located as follows:

1. West canopy of Building 9206.
2. North low roof of Building 9206.
3. Building 9768.
4. South canopy of Building 9206.
5-8. South low roof of Building 9206.

Three samplers in the exhaust from Building 9215 Daffodil areas located at the west end of the building.

c. Types of Analyses Normally Made on Effluent Water Samples

Alpha Activity - A portion of the liquid sample is evaporated on a steel planchet and counted with a proportional alpha counter.

Beta Activity - The same planchet from the above measurement is counted with a beta Geiger-Muller counter.

Lithium-Potassium-Sodium - The liquid sample is filtered and the individual elements are determined directly with a Perkin-Elmer flame photometer.

pH - The measurement is made directly on the sample with an electrometric pH meter.

Mercury - Mercury in the water sample is separated as the insoluble sulfide, on a cadmium sulfide impregnated asbestos filter pad. The pad is inserted into a tube furnace where the mercury is volatilized and the quantity of vapor is measured with the mercurometer.

Types of Analyses Normally Made on Air Samples

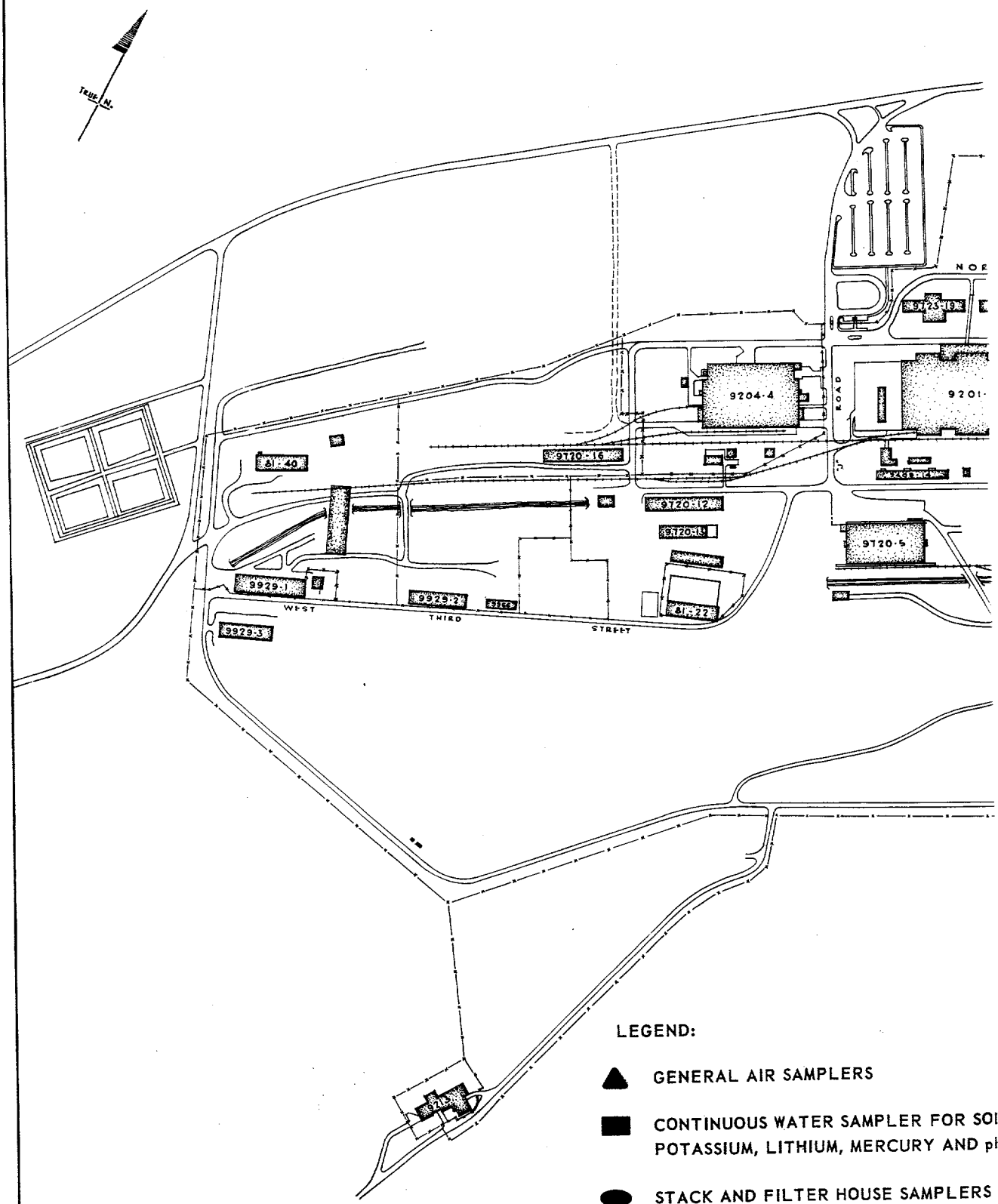
Beryllium - The samples are collected on a pre-tested ashless filter paper. The paper containing the sample is treated with a calcium solution, ashed, and analyzed spectrographically. A Jarrell-Ash, 21-foot, grating spectrograph is used for the analysis.

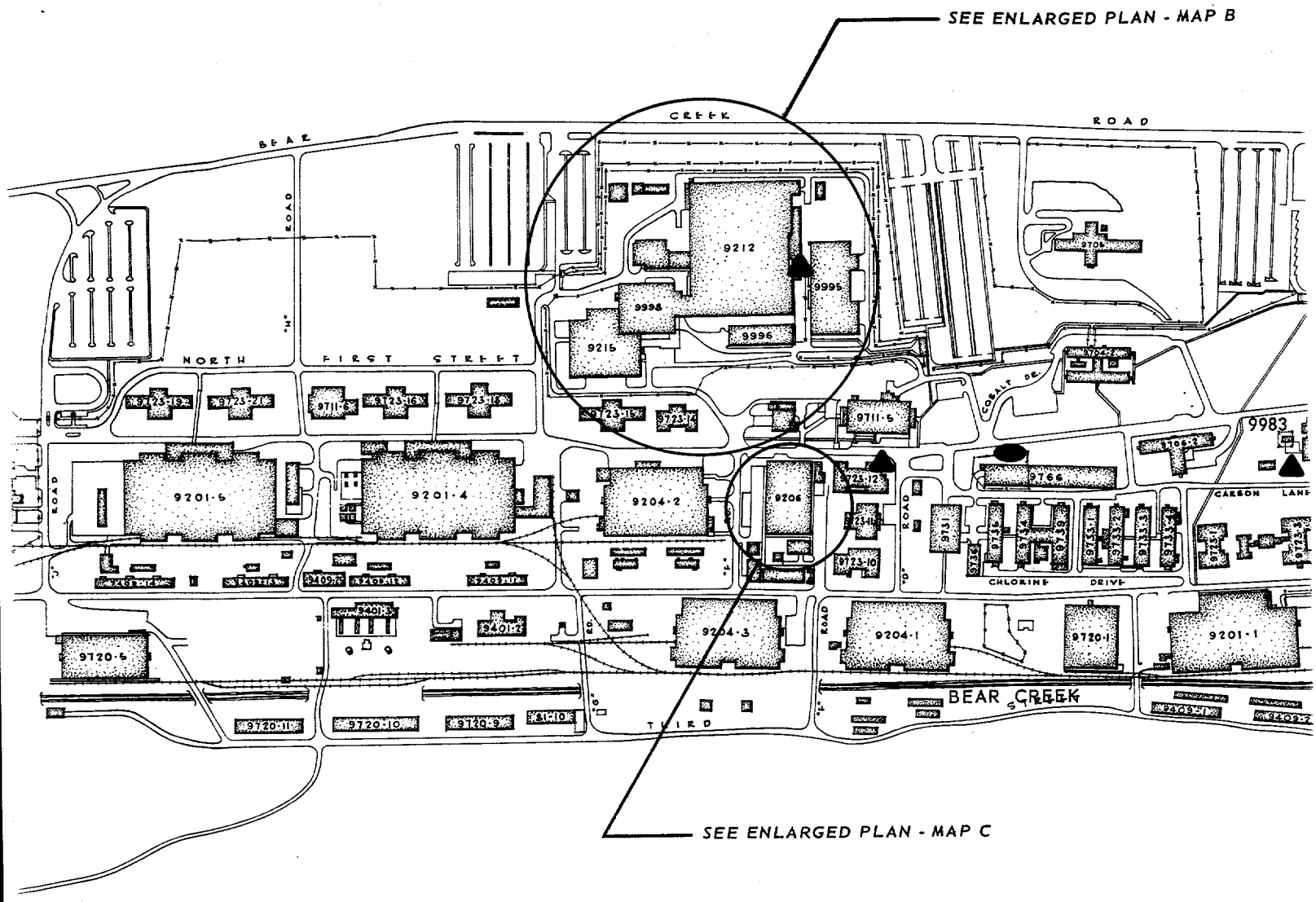
Alpha Activity - The air samples are collected on Hollingsworth and Vose Type 70 filter paper. The sample paper is mounted on a cardboard disc which has been designed for use in an automatic alpha counter. A Berkely Model 620-1 scintillation counter is employed to measure the alpha activity from the sample.

Beta Activity - The same filter paper sample from the above measurement is counted with a beta Geiger-Muller counter.

Non-Radioactive Cations - The filter paper upon which the air sample has been collected is acid treated and ashed. The residue is analyzed spectrographically for approximately 35 individual elements. A Jarrell-Ash 21-foot grating spectrograph is used for this analysis.

Attachments: Maps giving locations of Monitoring Stations


TRUE N.
9204-4
9201-
ROAD
9720-16
9720-12
9720-13
9720-5
9929-1
9929-2
9929-3
WEST
THIRD
STREET
LEGEND:
GENERAL AIR SAMPLERS
CONTINUOUS WATER SAMPLER FOR SO
POTASSIUM, LITHIUM, MERCURY AND p
STACK AND FILTER HOUSE SAMPLERS
FOR BERYLLIUM

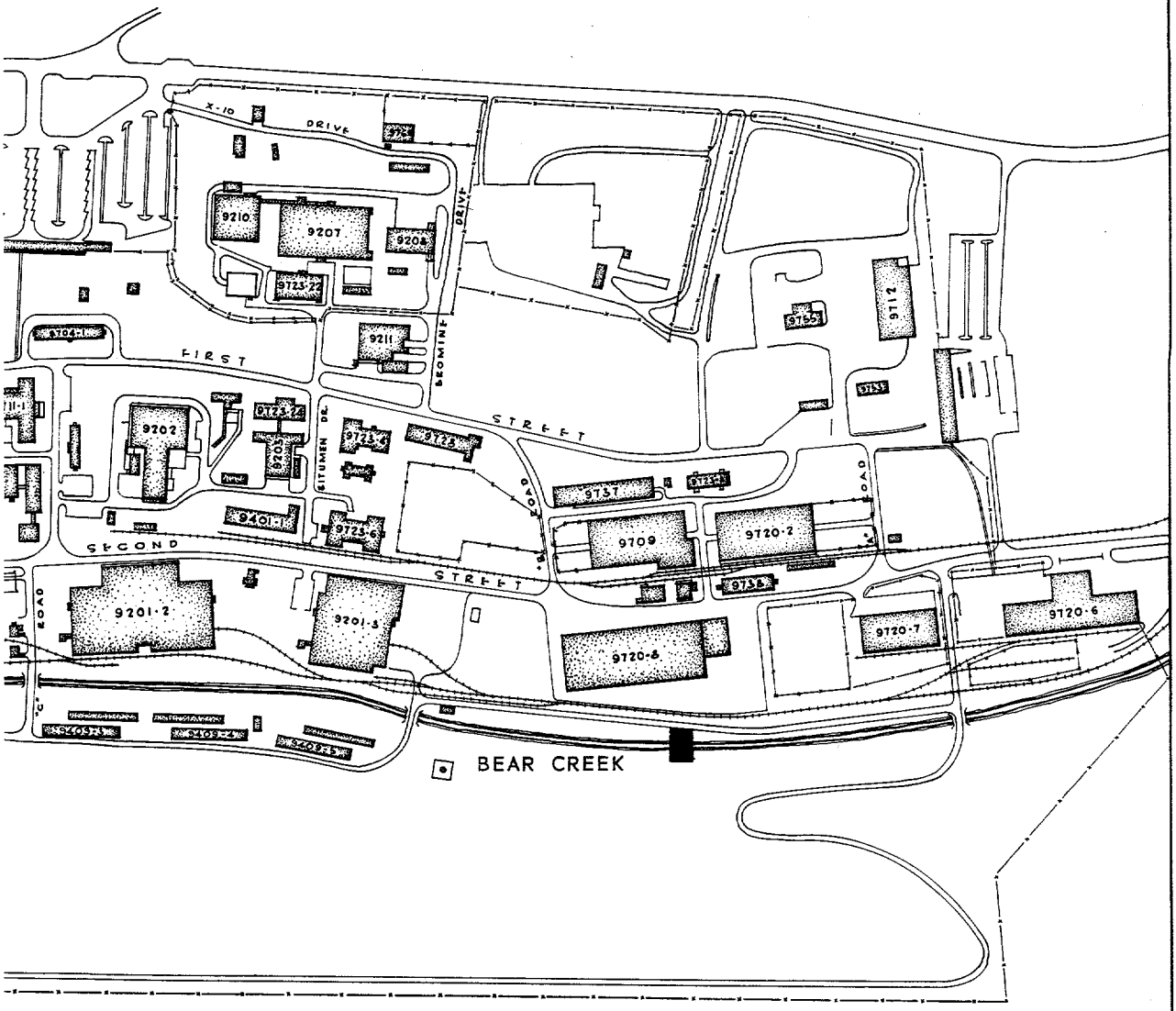


UNION CARBIDE NUCLEAR COMPANY
Y-12 PLANT

PLERS

ER SAMPLER FOR SODIUM,
UM, MERCURY AND pH

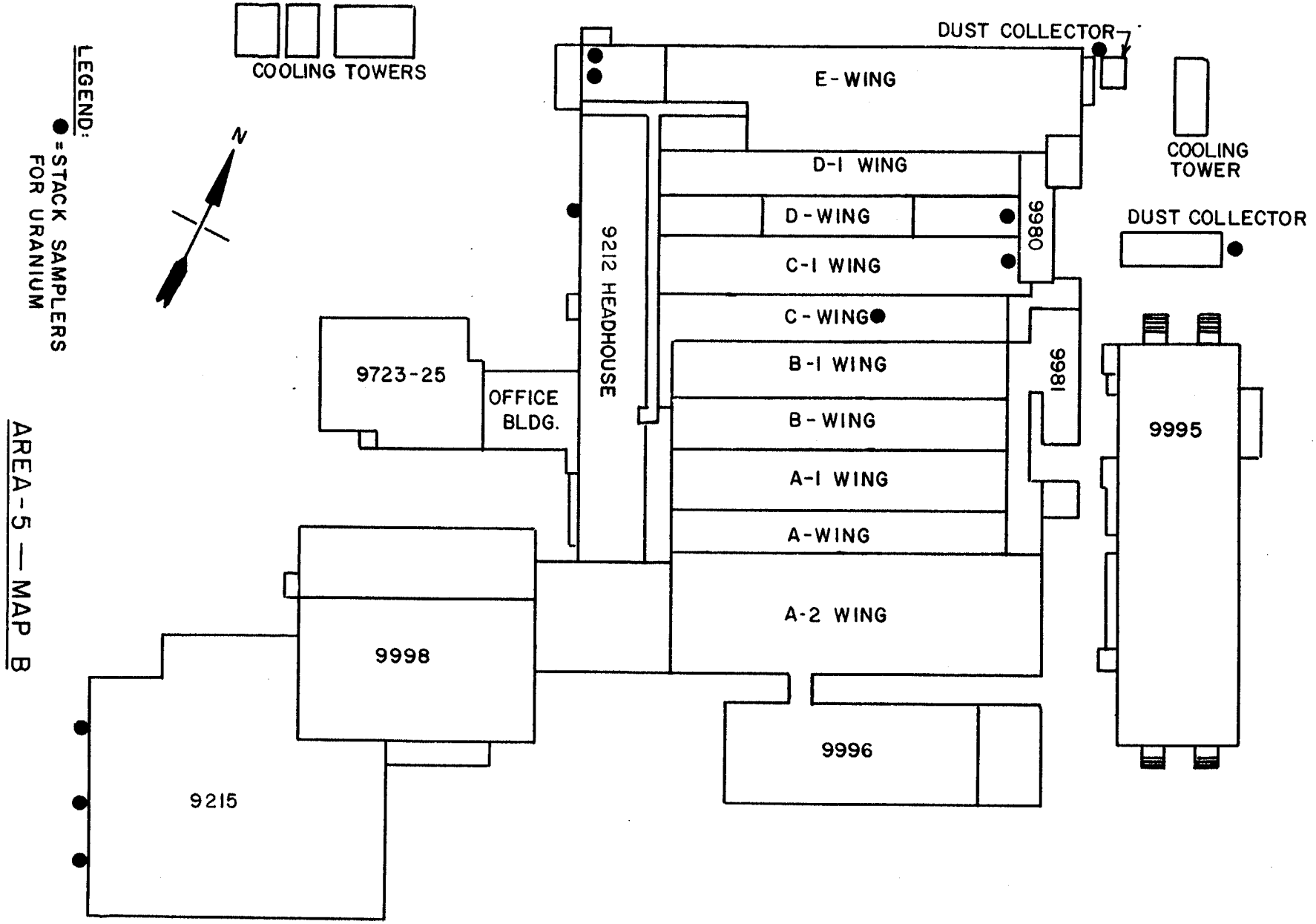
ER HOUSE SAMPLERS



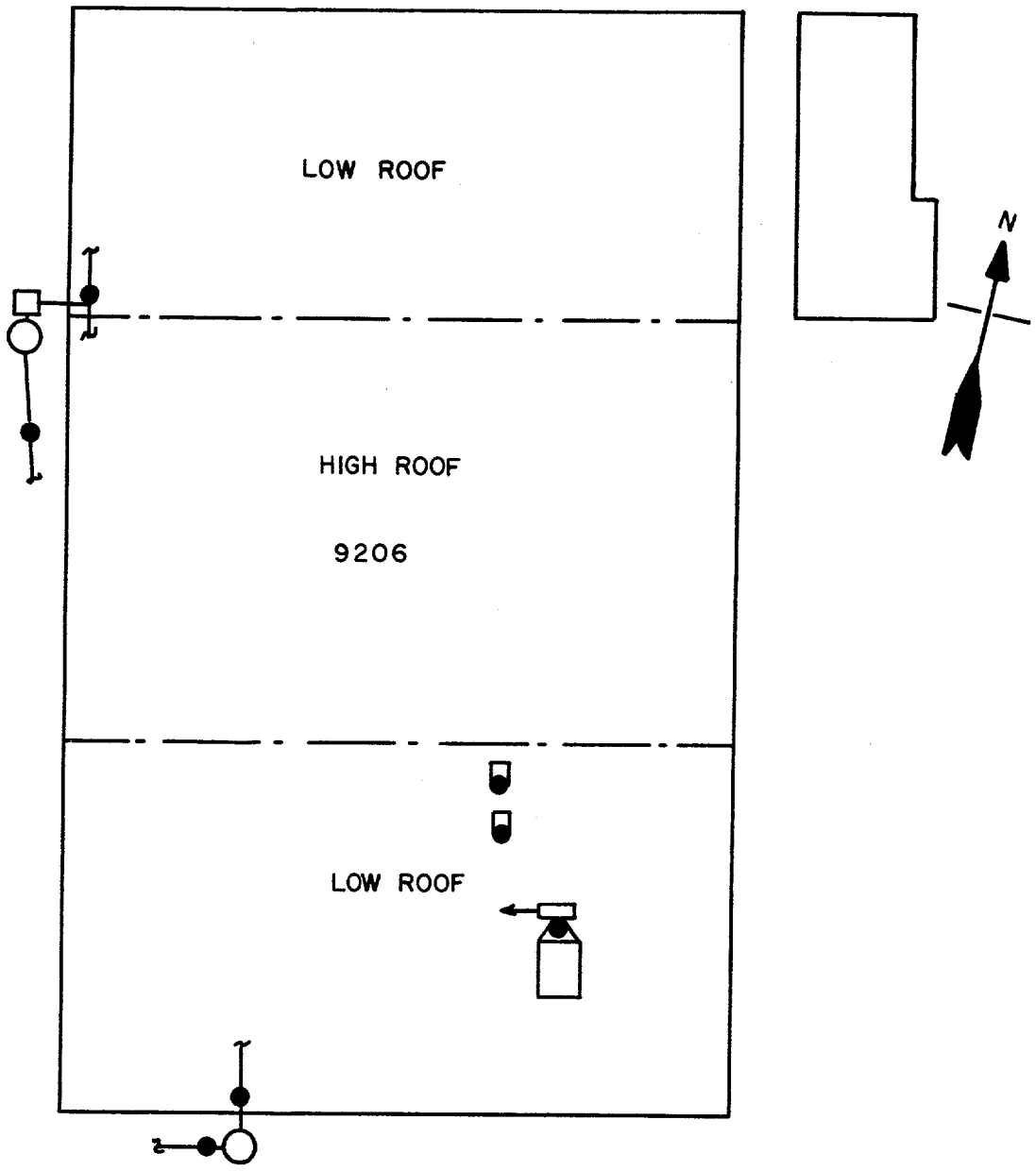
MAP A

AIR AND WATER MONITORING STATIONS

REVISED TO 11-1-57
r. e. kennedy 5-1-57


LEGEND:
● = STACK SAMPLERS FOR URANIUM
COOLING TOWERS
N
DUST COLLECTOR
E-WING
COOLING TOWER
D-I WING
D-WING
9980
DUST COLLECTOR
C-I WING
C-WING
9212 HEADHOUSE
9723-25
OFFICE BLDG.
B-I WING
9981
9995
B-WING
A-I WING
A-WING
A-2 WING
9998
9996
9215

AREA-5 — MAP B



9206 AREA — MAP C

H. P. - Rad. Exposure
Air Monitoring

INTER-COMPANY CORRESPONDENCE

UNION CARBIDE NUCLEAR COMPANY

A Division of Union Carbide and Carbon Corporation

To: Mr. M. E. Ramsey
Building 4500
ORNL

Plant: Y-12

Date: December 23, 1957

Copies To: Mr. C. E. Center
Mr. L. B. Emlet
Mr. A. P. Huber
Mr. G. A. Strasser
Mr. W. C. Moore
Mr. W. K. Whitson, Jr.
Mr. J. D. McLendon
Mr. W. A. Pfeiler
Mr. J. F. Morehead

Subject: Y-12 Environmental Monitoring Procedures

As requested by Mr. Emlet, we are forwarding the following data for inclusion in the four-plant reply to Mr. Sapirie's letter of November 12, 1957, "Environmental Monitoring Procedures".

Effluent Water Sampling

East Fork of Poplar Creek - There is a water sampling station due south of Building 9720-8. An automatic sampling device takes water samples from the creek at approximately 15-minute intervals. This sampler is so designed that it takes a sample proportional in volume to the amount of water flowing in the creek. A portion of this sample is analyzed daily for pH and the alkali metals Na, K, and Li. Another portion is composited into a weekly sample which is analyzed for alpha, beta, and mercury.

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2. Approximately 10 feet south of Building 9983.
3. In the intake air on the west side of Building 9995.

These samplers are operated on a 24-hour per day, seven days a week basis. The samples from Building 9723-12 and Building 9983 locations are analyzed for alpha and beta. Those taken at Building 9995 are analyzed for alpha only.

Beryllium samples are taken each work day in the filter house and exhaust of Building 9766 (Y-12 Beryllium Shop) for spectrographic analysis. Air samples are taken in the vicinity of the building if the results of the air exhaust approaches the established limits for an eight-hour day.

Two of Health Physics outside uranium air samplers, located east of Building 9723-12 and west of Building 9711-1, have recently been utilized for all cations not radioactive. These samples are collected daily, composited weekly, and analyzed spectrographically.

All process building exhausts are sampled during the initial start-up of operations containing potential hazardous materials and continued until the contaminant is below the established limit. Surveys are made at random, depending on conditions, to determine whether air-borne contaminants are remaining below the established threshold limits.

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3. Exhaust from Daffodil Salvage areas, east end of roof of C-Wing of Building 9212.
4. Exhaust from Daffodil Salvage, Special Processing, and Dry Chemistry areas, east end of roof of D-Wing of Building 9212.
5. Exhaust from Daffodil Salvage area, west end of 9212.
6. Exhaust from Daffodil Salvage area, center of roof of C-Wing of Building 9212.

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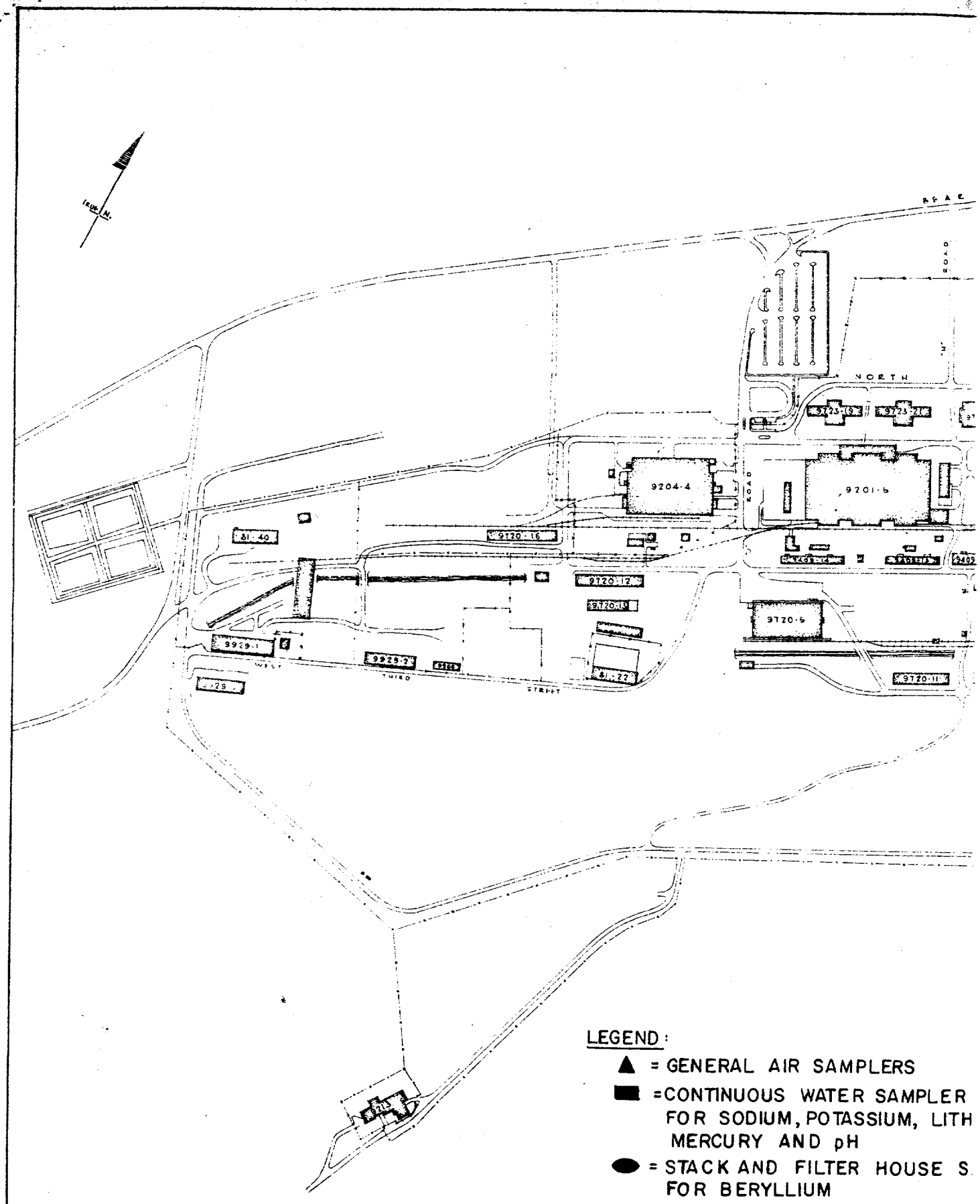
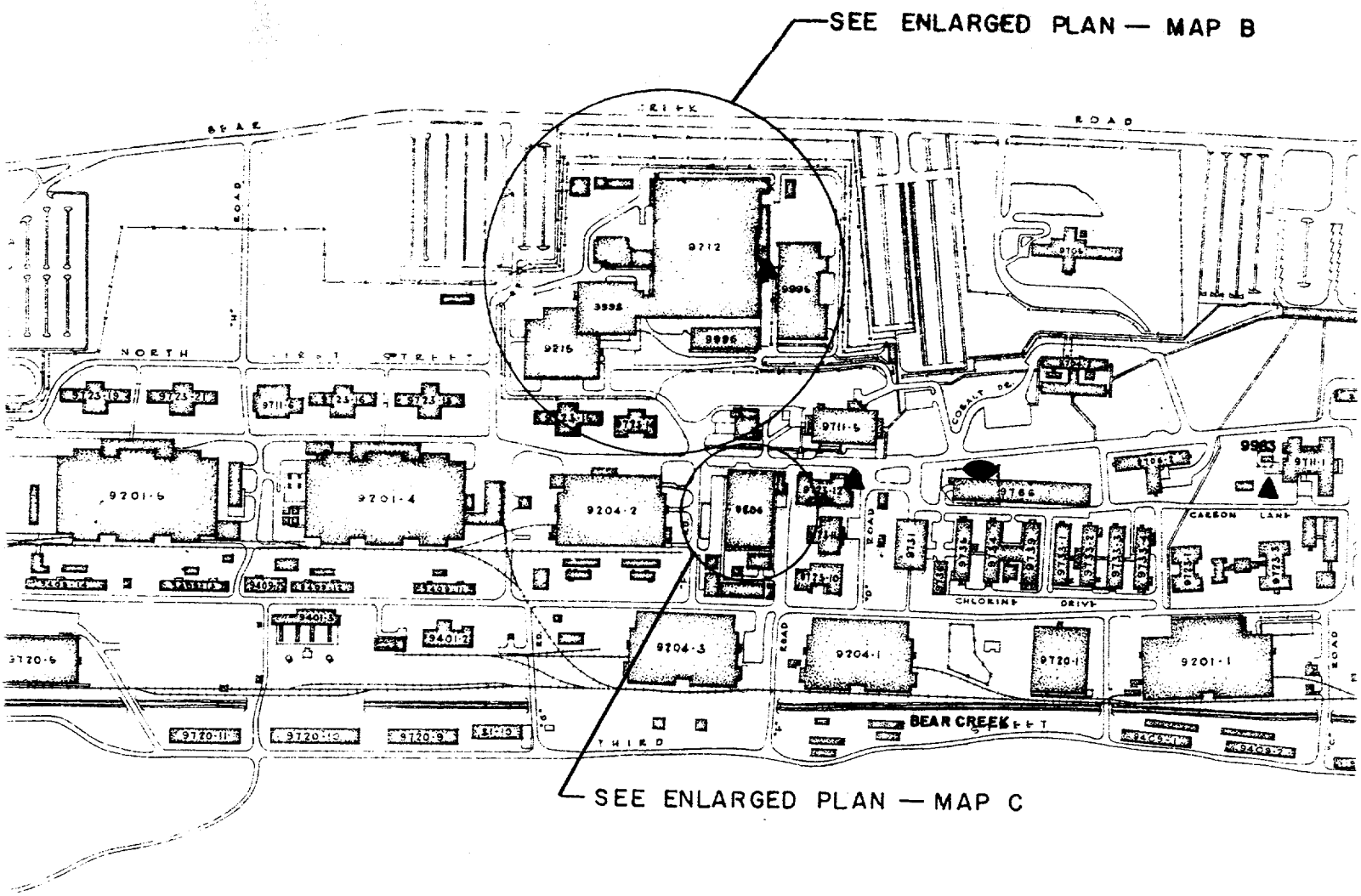
Maps are included giving locations of all monitoring stations.

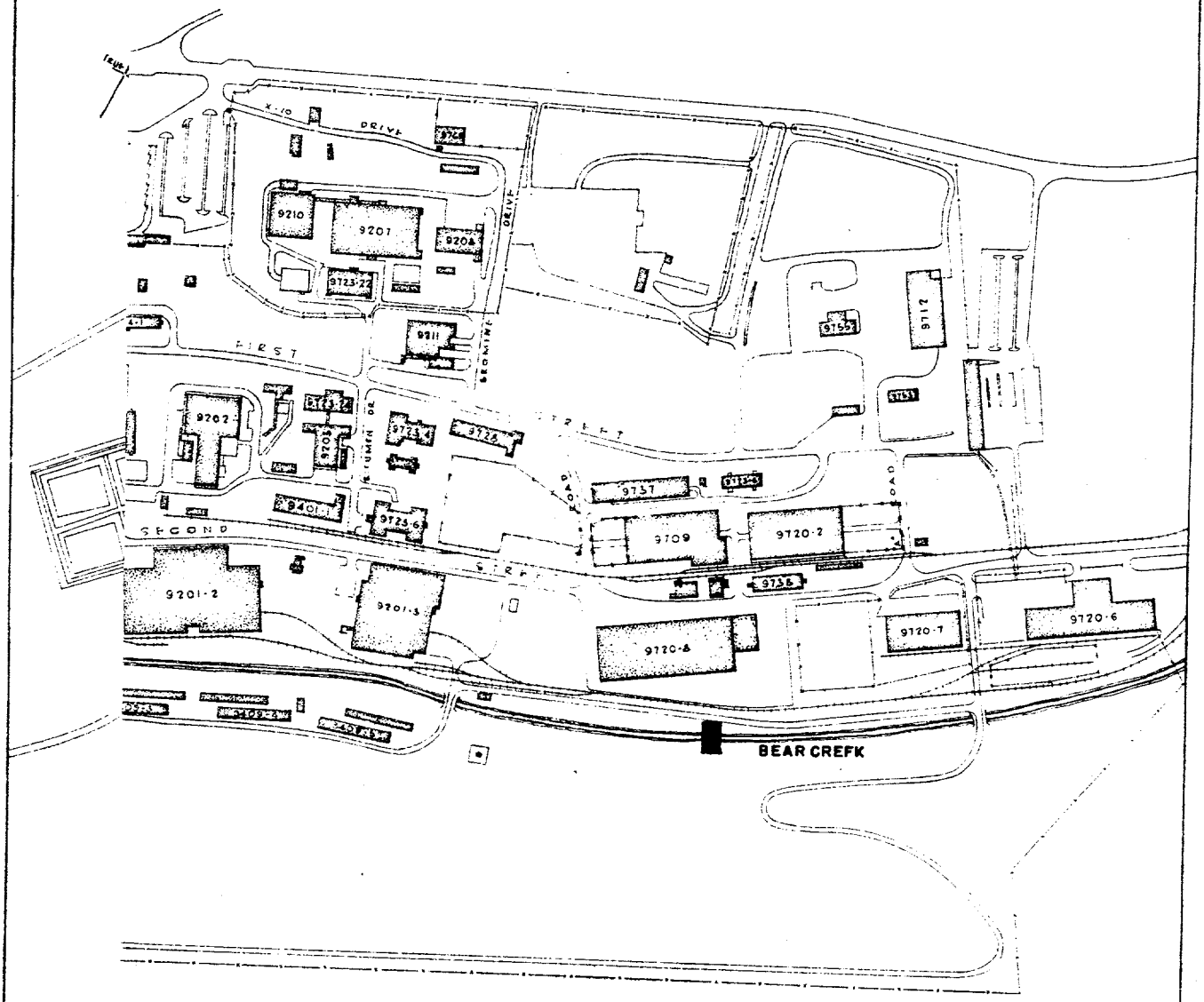
J. P. Murray


NORTH
ROAD
9204-4
9201-5
9720-16
9720-12
9720-10
9720-6
9720-11
9929-1
9929-2
81.40
81.22
.29
WEST
THIRD
STREET
LEGEND:
▲ = GENERAL AIR SAMPLERS
■ =CONTINUOUS WATER SAMPLER FOR SODIUM, POTASSIUM, LITH MERCURY AND pH
● = STACK AND FILTER HOUSE S FOR BERYLLIUM



UNION CARBIDE NUCLEAR COMPANY
Y-12 PLANT

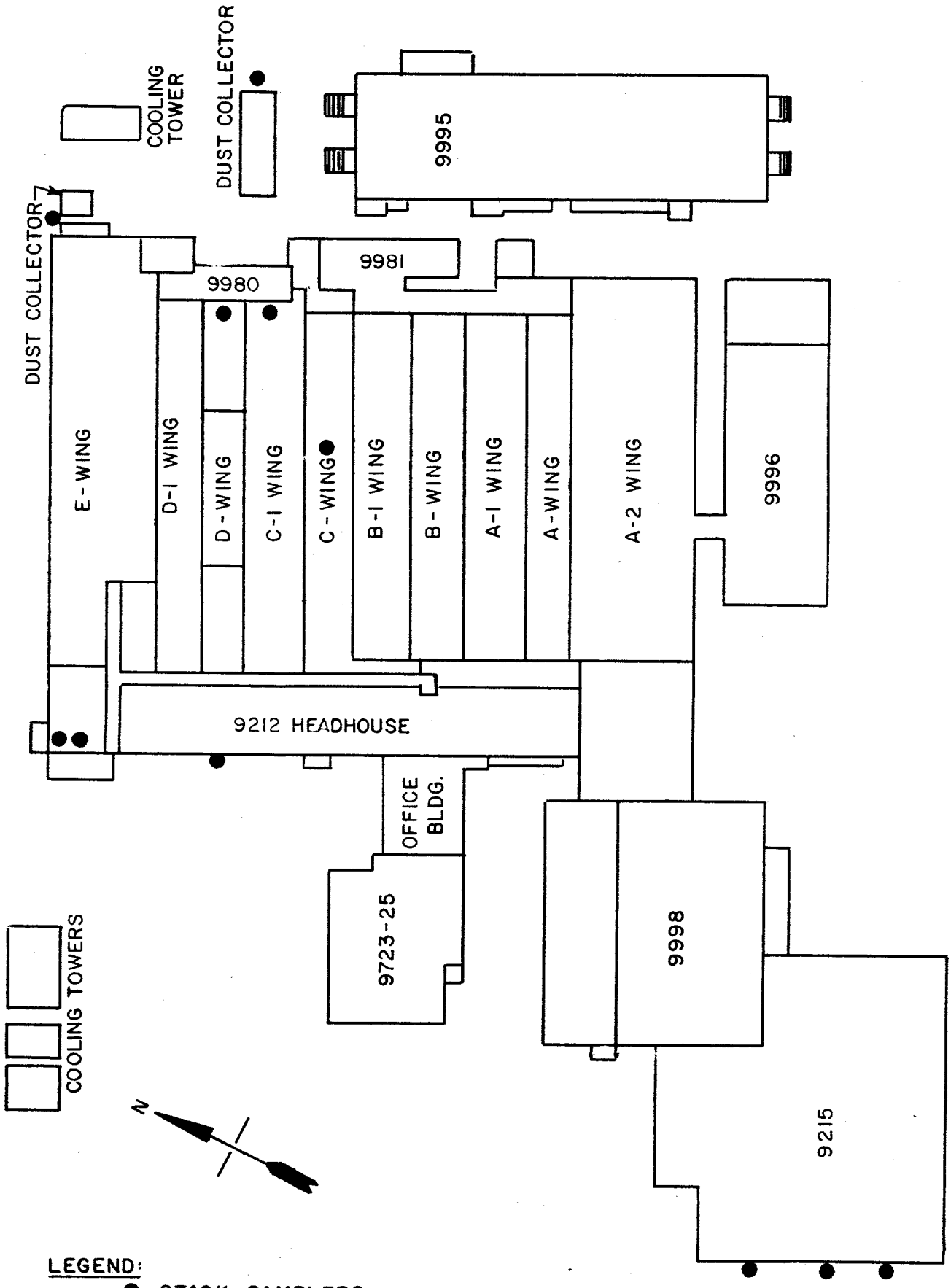
AIR SAMPLERS
US WATER SAMPLER
UM, POTASSIUM, LITHIUM,
AND pH
D FILTER HOUSE SAMPLERS
YLLIUM



MAP A

AIR AND WATER MONITORING STATIONS

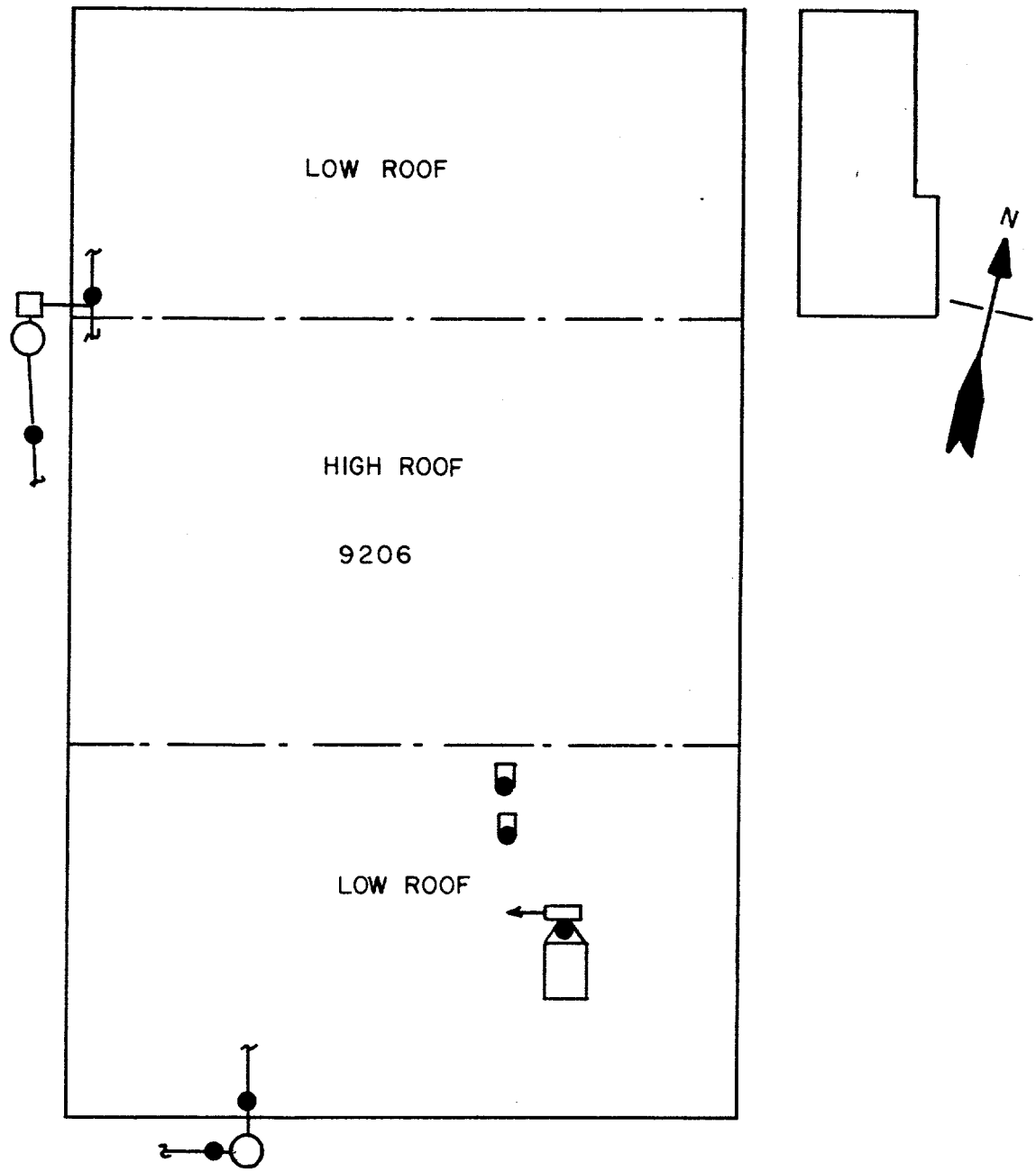
REVISED TO 11-1-57
r. e. kennedy 5-1-57



LEGEND:

● = STACK SAMPLERS FOR URANIUM

AREA-5 — MAP B



LEGEND:

● = STACK SAMPLERS FOR URANIUM

9206 AREA — MAP C

Air Monitor...

UNION CARBIDE NUCLEAR COMPANY

A DIVISION OF UNION CARBIDE AND CARBON CORPORATION

UCC

POST OFFICE BOX P
OAK RIDGE, TENNESSEE

November 25, 1957

Copy Fwd. by MER, 12-16-57
WKWhitson

U. S. Atomic Energy Commission
Post Office Box E
Oak Ridge, Tennessee

Attention: Mr. S. R. Sapirie

Gentlemen:

Subject: ENVIRONMENTAL MONITORING PROCEDURES

Reference is made to your letter of November 12, 1957 concerning environmental monitoring procedures.

The attached maps show the locations of the stations on the local area (Map 2) and our perimeter stations (Map 1).

Air samples are collected at all stations, both local and perimeter, by passing air continuously through a filter paper. The filter papers are changed normally once each week. Filter papers are autoradiographed to determine the number and activity range of the radioactive particles collected. They are counted for gross beta activity to determine the average concentration of radioactivity in the air sampled. Local air monitoring chart recordings are read daily to determine the hourly increase or decrease in activity collected on the filter paper. The counting rates of the ten local air monitors are telemetered via telephone line to Area Monitoring headquarters, Building 2012.

Gummed paper trays are located at each station to measure the fallout occurring in that area. Gummed paper trays are changed normally once each week. Gummed papers are autoradiographed to determine the number and activity range of the radioactive particles collected. After autoradiographing, each gummed paper is ashed in muffle furnace and the ash counted for gross beta activity collected as fallout.

Rainwater is collected at the seven perimeter stations and at one of the Laboratory area stations to measure the rainout occurring in these areas. Samples of the rainwater are filtered to separate the soluble and insoluble fractions and each fraction is analyzed for gross beta activity.

Collection of samples from air monitoring stations may be more frequent than once per week where air contamination levels are significantly high to warrant more frequent changes. Samples containing significant quantities of activity are given a more detailed analysis than described above by gamma spectrometry, radiochemical, decay and absorption techniques.

Liquid wastes leaving the Laboratory are sampled at three locations: (1) at the settling basin where the effluent enters White Oak Creek; (2) at White Oak Dam; and (3) at Centers Ferry on the Clinch River at Kingston, Tennessee.

Samples from the Settling Basin and White Oak Dam are analyzed daily for gross beta activity and gamma submersion exposure. Aliquots of each of these daily samples are composited into weekly samples which are analyzed radiochemically for plutonium content. Further aliquotes of each of these daily samples are composited into monthly samples which are concentrated and analyzed radiochemically for the presence of long lived fission products. The daily analyses are used to calculate the probable concentration of radioactivity in the Clinch River. The weekly composite analysis is used to determine the concentration and total quantity of plutonium released. The monthly composite analysis is used to calculate a weighted MPCw value for the radioactivity released to the Clinch River.

A sample is collected daily at Centers Ferry and composited for a three month period. The composite is filtered and the filtrate concentrated. The residue, or suspended solids, and the concentrate are analyzed for fission products to determine the level and composition of the activity existing in the Clinch River.

Yours very truly,

UNION CARBIDE NUCLEAR COMPANY

Clark E. Center
Vice President

CEC:DMD:mfm

cc: Alvin M. Weinberg
J. A. Swartout
L. B. Emlet
K. Z. Morgan
A. H. Snell
J. C. Hart
A. P. Huber, 1-21-58
R. G. Jordan "
J. A. Murray "

INTER-COMPANY CORRESPONDENCE

UNION CARBIDE NUCLEAR COMPANY

A Divison of Union Carbide and Carbon Corporation

To: Mr. M. E. Ramsey

Plant: **Paducah, Kentucky**

Date: November 22, 1957

Copies To: Mr. L. B. Emlet
Mr. E. C. Cain
File

Subject: Environmental Monitoring Procedures.

Copy Fwd. by MER, 12-16-57
WKWhitson

Information on our outdoor environmental monitoring program is attached. Drainage and water monitoring information has been omitted as suggested in the letter requesting this material.

R. G. Jordan

RCB/bjp
KYnoRC

Enclosures (2)

ENVIRONMENTAL MONITORING PROCEDURES

Building Exhausts and Vents

Sources of possible air pollution at the Paducah Plant are enumerated below. The only radioactive material vented in measurable quantities is normal uranium amounting to approximately 6 to 8 millicuries per day. The most significant materials of pollution are the gaseous fluorides, HF and F_2.

POSSIBLE SOURCES OF AIR POLLUTION

Source	Contaminant
C-400	
Day filter exhaust (from micropulverizer and screener)	U
Small parts decontamination hood	U, NH_3
Ash receiver evacuation exhaust	U, HF
Spray booth exhaust	U, HNO_3, NH_3
Dissolver tank exhaust (3)	U, HNO_3
Drum dryer exhaust	HNO_3
Calciner Exhaust	U, HNO_3
Converter conditioning exhaust	F_2, HF
Cleaning tanks exhaust stack	Trichlor, NH_3 troxide, alkali
C-410	
Main stack	U, F_2, HF
Day filter exhaust (local exhaust system)	U
Vacuum Collector exhausts	U, HF, F_2
Refrigerant Pressure Relief System	NH_3
Fluorine Plant Vents	F_2, HF, H_2
C-420	
HF System Vent	HF
H_2 Burner vents	U, H_2S
Dust collector exhausts	U, H_2S, HF
C-310	
Purge Gas Vent	HF, F_2, U
C-340	
Neutralizer Vent	HNO_3
Vacuum Collector exhausts	U, HF
C-600 (Steam Plant)	
Furnace stack	SO_2, smoke

Exhaust system vents have been checked for emissions by observation, instruments, and chemical analyses to determine normal and maximal pollution potential. Non-routine samples for HF, F_2, uranium, SO_2 and alpha activity have been taken downwind of the probable sources of emission. A routine sampling program was begun this month to sample the air at points on the attached map. Gaseous fluorides are being given the greatest emphasis, but a few analyses of uranium and SO_2 are being scheduled. Three samplers are being operated every eighth day at 3 of the positions marked to collect 3 consecutive 8-hour samples.

RCB

November 22, 1957